

# PATENT ABSTRACTS OF JAPAN

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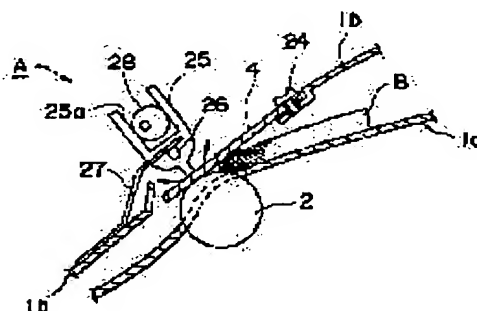
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## (54) SHEET SEPARATING AND FEEDING MECHANISM

### (57)Abstract:

**PURPOSE:** To provide a document separating and feeding mechanism which has an inexpensive and simple structure and which can separate and feed even several stacked documents one by one.

**CONSTITUTION:** A sheet separating and feeding mechanism is composed of a paper feed roller 2 for conveying documents toward the downstream side, a separating piece 4 disposed above the roller 2 and made into press-contact with the roller 2, for separating and clamping documents one by one, and a separating piece oscillating member 25 adapted to swing around a rotary shaft 26 at a predetermined period so as to oscillate the separating piece 4.



## LEGAL STATUS

[Date of request for examination]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the deleaving delivery device in which it separates at a time one sheet of form supplied in the condition of the manuscript paper which was used for example, for fuck SHIMIRI and was set on the manuscript tray.

[0002]

[Description of the Prior Art] The above-mentioned manuscript deleaving delivery device A currently used for conventional, for example, fuck, SHIMIRI was constituted as generally shown in drawing 4.

[0003] Namely, the feed roller 2 which conveys to the downstream the manuscript paper B which the tip was located between chute inferior lamella 1a and chute superior lamella 1b, and was set on the manuscript tray, It has the sequestrum sheet 4 which has high coefficient of friction made of rubber which it is arranged above this feed roller 2, it is caudad pressed by the fixed pressure through coiled spring 3 grade, and carries out a pressure welding to said feed roller 2. It was made as [ send / the manuscript paper B set on the manuscript tray between said feed rollers 2 and sequestrum sheets 4 / to the transmitting section / one sheet carries out separation pinching at a time, and ].

[0004]

[Problem(s) to be Solved by the Invention] However, by the above-mentioned conventional manuscript deleaving delivery device, when the set number of sheets of manuscript paper increased, it is hard coming to enter between the sequestrum sheets with which manuscript paper is pressed towards the feed roller and this feed roller and may not only be connected with non-delivery of manuscript paper, but there was a trouble of becoming the so-called multiplex delivery which sends the manuscript paper of two or more sheets to coincidence.

[0005] It is made in order to solve the trouble mentioned above, it is cheap, and moreover, even if this invention is comparatively easy structurally and sets forms, such as more manuscripts, it aims at offering the deleaving delivery device separates one of this at a time certainly, and it enabled it to send to the downstream.

[0006]

[Means for Solving the Problem] It is characterized by to have the sequestrum oscillating member which vibrates the feed roller which the manuscript deleaving delivery device of this invention is a deleaving delivery device for separating and feeding one sheet of form at a time, and conveys a form to the downstream, the sequestrum sheet which carries out separation pinching of every one sheet of form which carried out the pressure welding to this feed roller, and was supplied between feed rollers, and said sequestrum sheet in order to attain this purpose.

[0007]

[Function] According to the deleaving delivery device of this invention in which it has the above-mentioned configuration, the sequestrum sheet which is carrying out the pressure welding to the feed roller vibrates according to an operation of a sequestrum oscillating member, and even if it separates a form and the set number of sheets of a metaphor form increases by giving this vibration at the tip of a form, the form locate in the bottom can make it easy to enter between a sequestrum sheet and a feed roller, and it can send one of this at a time to the downstream certainly.

[0008]

[Example] Hereafter, one example which materialized this invention is explained with reference to a drawing. According to the manuscript deleaving delivery device A equipped with the feed roller 2 and the sequestrum sheet 4 grade, one sheet dissociates at a time and the manuscript paper B (refer to drawing 1) which drawing 3 shows the sectional view of facsimile, located the tip between chute inferior lamella 1a and chute superior lamella 1b, and was set on the manuscript tray 5 is sent to the transmitting section C of the downstream. And it is pinched between the pressure-welding rollers 6 and the paper feed rollers 7 with which this transmitting section C was equipped, and transmits by the light which came out of the light source 9 arranged between this paper feed roller 7 and the delivery roller 8, and was reflected with manuscript paper B reflecting by two mirrors 10a and 10b, and inputting it into CCD11, and the manuscript paper B after transmission is discharged outside from the delivery roller 8.

[0009] On the other hand, the receive section D is equipped with the thermal head 14 which was supported by the support plate 12 and was caudad energized with the spring 13, and the platen roller 15 which carries out a pressure

welding for locating under this thermal head 14. And after tension is given with the curl picking plate 18, when the roll sheet 17 twisted around the paper tube 16 passes through between this thermal head 14 and platen roller 15, it is printed, it is discharged by the \*\*\*\*\* tray 19, and is made as [ cut / by the cutter 21 supported by the cutter support frame 20 ].

[0010] In addition, in this drawing, a code number 22 shows a control panel and the code number 23 shows the power source, respectively. The detail of the above-mentioned manuscript deleaving delivery device A is shown in drawing 1 .

[0011] A feed roller is located in the center of an equipment longitudinal direction (the direction of a front flesh side of the space of a drawing). That is, the sequestrum sheet 4 made of rubber is arranged in contact with this feed roller 2, and this sequestrum sheet 4 is \*\*\*\*\*ed to chute superior lamella 1b, and is attached above said feed roller 2 by 24. The coefficient of friction  $r_1$  of this feed roller and manuscript paper, the coefficient of friction  $r_2$  of a sequestrum sheet and manuscript paper, and the coefficient of friction  $r_3$  of the piled-up manuscript paper fill the relation of  $r_1 > r_2 > r_3$ . Above this sequestrum sheet 4, the sequestrum oscillating member 25 to which a lower limit contacts this top face is arranged, and bearing of the rocking of this sequestrum oscillating member 25 is made free to the revolving shaft 26.

[0012] The tip of the flat spring 27 which fixed the end face to said chute superior lamella 1b contacts this revolving shaft 26, and it is made as [ press / through the sequestrum oscillating member 25 bearing of the rocking of was made free to this revolving shaft 26, / press a revolving shaft 26 caudad, / it / by the fixed pressure, / by the elastic force of this flat spring 27, / by this, / turn the sequestrum sheet 4 to the feed roller 2, and ].

[0013] Moreover, cavity 25a of a \*\* form is prepared in the upper part of said sequestrum oscillating member 25, and the eccentric cam 28 which rotates by the driving source which is not illustrated in this cavity 25a is arranged in contact with the wall surface of this cavity 25a by two places. This eccentric cam 28 has the same path as the path of said cavity and is cylindrical. By rotation of said eccentric cam 28, the sequestrum oscillating member 25 rocks with the fixed amplitude and the number of rocking to a cross direction centering on a revolving shaft 26, and it is made as [ give / the sequestrum sheet 4 which contacts the sequestrum oscillating member 25 with this rocking / vibration of a cross direction ].

[0014] The number of rocking of this sequestrum oscillating member 22 is about per second 6 times, and the amplitude is about 0.5-1mm. By this, manuscript paper B arranges a tip by the user, and it is set on chute inferior lamella 1a, and if the start key which is not illustrated is pushed, the feed roller 2 tends to rotate and it is going to send manuscript paper B to the downstream. Moreover, rotate by the driving source which does not illustrate an eccentric cam 28, either, and the sequestrum oscillating member 25 is made to rock with the fixed amplitude and the number of rocking as mentioned above, and it is constituted so that the sequestrum sheet 4 may vibrate with this rocking.

[0015] Here, with reference to drawing 2 , the actuation at the time of separating one sheet of manuscript paper B at a time is explained. This drawing (a) shows the condition immediately after setting the bundle of manuscript paper B between chute 1a and 1b. At this time, manuscript paper is in the condition of having been arranged. If it was in conventional equipment, since the elastic deformation of a sequestrum sheet was large when the thickness of this bundle is thick, the contact pressure of manuscript paper was large, and also in order that the manuscript paper under re-might not fully contact a feed roller, there was a case where manuscript paper was not sent. However, if it is in this example, he is trying to send a form certainly according to the following operations.

[0016] First, as a sequestrum oscillating member rocks back and it is shown in this drawing (b) by rotation of an eccentric cam, it comes to a top dead center. Then, a sequestrum sheet bends back. And if an eccentric cam rotates in this direction further, said bending will be canceled and a bottom dead point will be reached. When said eccentric cam continues rotating, this the actuation of a series of is repeated. When the contact pressure of manuscript paper becomes weaker since a sequestrum sheet loosens if the above-mentioned sequestrum oscillating member is in the condition of having reached the top dead center, adhesion of each manuscript paper can loosen by vibration of the sequestrum sheet by this the actuation of a series of.

[0017] Since the drive motor is continuing rotation also in the meantime, the force is added at the tip of manuscript paper B, adhesion of each manuscript paper of the part can loosen, and paper is entered and fed to the manuscript paper B located in the least significant between the sequestrum sheet 4 and the feed roller 2.

[0018] Thereby, even if the set number of sheets of metaphor manuscript paper B increases, between the sequestrum sheet 4 and the feed roller 2, the manuscript paper B located in the bottom can make it easy to enter, and it can send one of this at a time certainly at the downstream.

[0019] If the tip of the manuscript paper to which paper is fed reaches between the pressure-welding roller 6 of the downstream, and the paper feed roller 7, the drive of a feed roller stops and a feed roller will be in a follower condition. And if the back end of the manuscript paper to which paper is fed separates from a feed roller, rotation of a feed roller will resume after predetermined time.

[0020] In addition, this invention is not limited to the above-mentioned configuration, but various deformation is possible for it. For example, although carried out as a configuration which makes a sequestrum oscillating member rock by the cam, you may make it rock a sequestrum sheet by the configuration of a solenoid, a piezoelectric device, etc. in the above-mentioned example.

[0021] Moreover, it is good also as a configuration which vibrates the installation location of a sequestrum sheet itself.

[0022]

[Effect of the Invention] according to [ so that clearly from having explained in full detail above ] this invention -- a cheap and moreover comparatively easy configuration -- a metaphor -- many -- the time of setting the manuscript paper of several sheets -- manuscript paper -- one-sheet \*\*\*\* -- it can dissociate certainly, and can send to the downstream and this can perform separation delivery of stable manuscript paper without non-delivery or multiplex delivery.

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**CLAIMS**

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[Claim(s)]

[Claim 1] The deleaving delivery device characterized by having the feed roller which is a deleaving delivery device for separating and feeding one sheet of form at a time, and conveys a form to the downstream, the sequestrum sheet which carries out separation pinching of every one sheet of form which carried out the pressure welding to this feed roller, and was supplied between feed rollers, and the sequestrum oscillating member which vibrates said sequestrum sheet.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is the schematic diagram showing the important section of one example of this invention.

[Drawing 2] Similarly, it is \*\*\*\*\* given to an operation of operation.

[Drawing 3] It is the sectional view of facsimile.

[Drawing 4] It is the schematic diagram showing the important section of the conventional example.

[Description of Notations]

2 -- Feed roller

4 -- Sequester sheet

9 -- Light source

11 -- CCD

14 -- Thermal head

15 -- Platen roller

25 -- Sequester oscillating member

26 -- Revolving shaft

27 -- Flat spring

28 -- Eccentric cam

A -- Manuscript delevaing delivery device

B -- Manuscript paper

C -- Transmitting section

D -- Receive section

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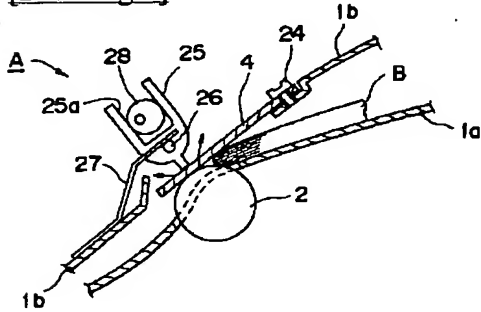
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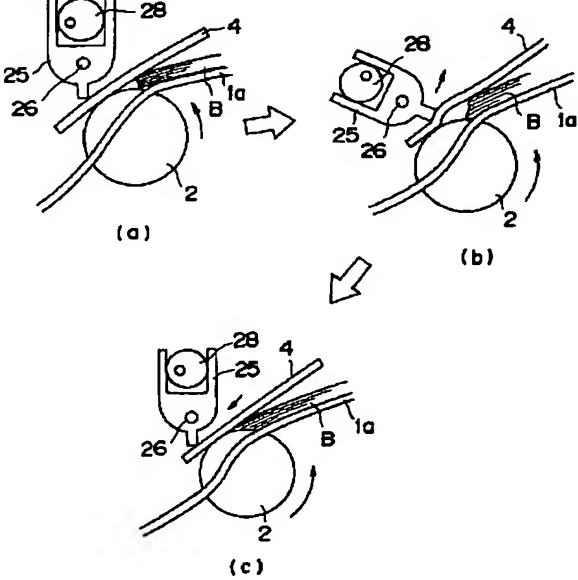
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DRAWINGS

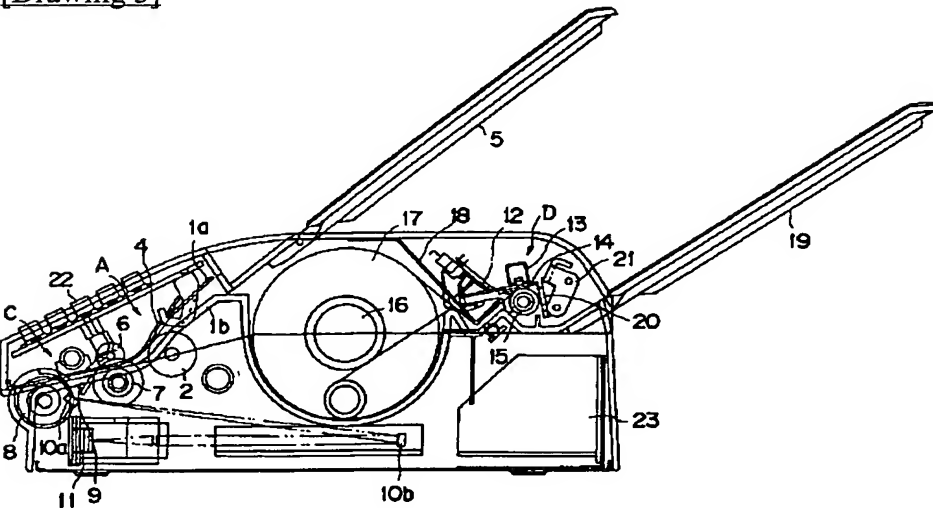
[Drawing 1]



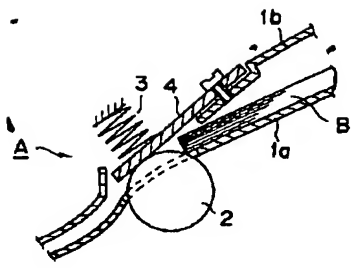
[Drawing 2]



[Drawing 3]



[Drawing 4]



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